DEVELOPING A TOOL TO MEASURE THE IMPACT OF E-LEARNING ON THE TEACHERS' OF HIGHER EDUCATION

By

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ABSTRACT

The trend of using e-learning as a teaching tool is now rapidly expanding into education. Although e-learning environments are becoming popular there is minimal research on the impact of e-learning on the teachers. The purpose of this study is to develop a tool to measure the impact of e-learning on the teachers' of Higher Education in the Indian scenario. Initially the tool was constructed with 53 statements and administered to 300 teachers of Higher Education. Out of these 53 statements 17 statements focused on personal effectiveness, 21 statements focused on teaching skills and 15 statements focused on research and academic work. In order to standardize the tool the researcher applied Kolmogorov-Smirnov test, Cronbach Alpha test, Correlation and 't' test. After the item analysis 30 statements were selected with the dimensions Personal Effectiveness (10), Teaching skills (13) and Research and Academic work (7).

Key Words: *E-learning, Kolmogrov-Smirnov test, Gronbach Alpha test, Correlation, Higher Education.*

INTRODUCTION

Educators must go beyond Computer literacy to achieve technological competence for successful integration of technology into the classroom to occur. Technological competence also requires a transition from using the computer as an instructional delivery system to one of using the computer as a learning tool. (Deborah L. Lowther 1998). The trend of using e-learning as a learning and/or teaching tool is now rapidly expanding into education. E-learning is the new wave of learning strategy. Through innovative use of modern technology, e-learning not only revolutionizes education and makes it more accessible, but also brings formidable challenges for instructors and learners. (Shu-Sheng Liaw, 2007). E-learning environments increasingly serve as important infrastructural features of universities that enable teachers to provide students with different representations of knowledge and to enhance interaction between teachers and students, and amongst student themselves. (Mahdizadeh. H et al. 2007).

E-learning is booming in Higher Education in the US market and there is a massive movement for global e-learning. E-learning is an extremely adaptable technology that can be used to cover different delivery modes-self-paced, interactive, or live learning and can match the varied training needs. E-learning makes knowledge and skills available immediately and reduces the learning time required to master even the most complicated topics. Benefits of e-learning have a favourable impact on the organizations profitability. (Deepak K. Srivastava., et al. 2005).

The traditional teaching methods, namely lectures, demonstration, seminar, tutorials and brainstorming, remain common in Higher Education in India. Technology based or technology enabled methods are becoming popular. Personal computers have become a familiar part of the higher educational system. After the emergence of personal computer, CAI and CBT had gained wide acceptance. Currently the internet has made revolutionary changes in the teaching-learning process. At present e-learning has become popular. E-learning not only comprises CAI or CBT but it also encompasses the use of CD-ROM, Mobile phone and personal digital assistants and other Information and

Communication Technology Media.

Related Studies

Two closely related and over-determining myths have shaped government inspired policy towards Information and communication technologies (ICT) and education. The one is irresistible power of globalization, the other is the determining effect of technology. The result of both is to present the acceptance of e-learning throughout the education system as inevitable.

New developments in e-learning and increasingly sophisticated learning technologies are beginning to make a major impact in U.K. universities. It is clear that universities need to change to accommodate the impact of technology on learning. Communication technologies that are free from time or place constraints provide new challenges to universities on how they should be organised. The impact of e-learning will require universities to re-think fundamentally their thinking and therefore their strategies in a whole range of areas. Norah, jones, & John, o'shea. (2004).

Teachers' attitude towards e-learning courses in Bulgarian universities:

The study tries to analyze the attitude of using information and communications technologies as well as e-learning by the lecturers from Higher Educational institutions. The deficit of academic recognition and financial stimuli as well as the fact that the preparation of e-materials is a time consuming activity could be specified as negative factors. The lack of adequate hardware and software facilities represents an additional embarrassment. The use of ready made electronic content were less especially in humanities because of its lack or inappropriateness. In addition lecturers with significant teaching experience (more than 10 years) were less inclined to develop and apply electronic learning materials. We think that in the near future e-learning environments are to be made popular among academic lecturers. D.Tuparova, G.Tuparov, S. Ivanov, E. Karastranova, & J. Peneva (2006).

The study on the teachers attitude towards e-learning results show great conformity to deriving benefits of e-learning in both teaching and research. However, faculty members in this study expressed certain reservations regarding the future implementation of e-learning at the university. Their attitudes reflect faculty members' lack of trust in one another's ability in using advanced technologies in teaching as well as in building up teamwork spirit in the workplace. Hamdan Mubarak Al-Khashab (2007).

Worldwide there is an increasing demand for educational institutions to offer part of their courses online and mixed mode. For institutions to comply with these demands, it is necessary to prepare teachers (and other members of the staff), to fulfil their responsibilities within the virtual environment. Teachers must be able to organize their courses pedagogically according to different conditions, i.e., subject domains, group sizes, variations within communication and interaction. Teachers must acquire knowledge and skills in handling Information and Communication Techniques (ICT) as well as pedagogical possibilities and constraints inherited in the software available. Several studies demonstrate that technical obstacles are easier to overcome than lack of communication skills. Also the consequenses of communication breakdowns tend to create serious problems that technology cannot solve. These problems concern about how teachers function satisfactorily as mediators and coaches in collaborative, knowledge sharing virtual environments. For example, how teachers support their students in becoming online-students and how they facilitate complex discussions on difficult topics. This is a big challenge for everybody involved in e-learning, and the challenge is not met by offering introductory courses for university teachers. Based on a recent examination of concrete actions and strategies for the future within 11 Danish universities, there exists a severe mismatch between the organisational expectations and strategies and the competence-evolving activities that the same organisations offer to their staff. A recent case study of a university pedagogy course on e-learning for university teachers demonstrates and identifies some of the consequences of the mismatch. Finally the author suggests strategies to meet

the demands of the future online university. (Karin Tweddell Levinsen, 2006)

Objective

The purpose of this study was to **develop a research tool to measure the impact of e-learning** on the teachers of Higher Education with reference to the improvement on their **personal effectiveness, teaching skills and research and academic work.** As such it seems that there is no research tool to measure the impact of e-learning on the teachers of Higher Education in the Indian Scenario and the researcher intended to construct a tool.

Methodology

In order to develop the tool at the preliminary stage the researcher consulted the experts on online learning, the teachers who are very much familiar with e-learning, literatures on e-learning and also visited web sites and gathered information. Based on the information gathered as many as 53 statements were developed. Out of the 53 statements 17 statements focused on personal effectiveness, 21 statements focused on teaching skills and 15 statements focused on research and academic work. The response of the tool was of 5 point likert scale with the responses strongly agree, agree, undecided, disagree and strongly disagree. The responses were given the weightage of 5, 4, 3, 2 and 1 for strongly agree, agree, undecided, disagree and strongly disagree respectively.

The tool was administered to 300 teachers of Higher Education randomly selected from 15 Engineering Colleges in Chennai, Coimbatore, Salem, and Madurai cities in Tamil Nadu, India. The institutions were selected on the basis of e-learning facilities available. All the 300 tools were scored carefully based on the scores the tools were arranged in the descending order from the highest to the lowest. The higher 27% and lower 27% of the respondent were taken for item analysis. Accordingly 81 cases from the higher group and 81 cases from the lower group were considered.

In order to select the reliable items the researcher has used four statistical measures namely (i) 't' value, (ii) Kolmogorov-Smirnov test, (iii) Gronbach's Alpha test, and (iv) Correlation. In order to select the items the research tools collected from 300 teachers were arranged on the basis of the scores in decreasing order of magnitude. The higher 27% and lower 27% of the respondent were identified. It amounts to 81 from the higher group and 81 from lower group. Totally 162 tools were taken into consideration for the analysis. Then for the higher group and the lower group the individual test item scores were computed. Then using Kolmogrov Smirnov test two sample non-parametric test the equality of mean scores was tested, the mean scores that differed significantly were retained. The significant level is 0.0 level and the Kolmogorov Smirnov test value for such of those items which are significant at 0.0 level were considered for the final tool and the values are given in Table1.

The Cronbach's Alpha value was calculated for the two set of scores for each statement. The item with the Cronbach's Alpha value greater than 0.5 were retained and less than 0.5 were not considered.

A tool will be deemed reliable, if it gives the same measurement for the same object if repeated measurements are taken in a similar way and the test scores allotted to each and every statement must be the same if the test is repeated for the same individual or applied to two or more number of individuals. Therefore if the scores allotted by a set of individuals for a single statement is correlated with the scores allotted by any another set of individuals for the same statement then the statement is reliable. For this purpose the Pearson correlation co-efficient is computed and if it is high and significant it can be retained as reliable. The statements with the 'R' value greater than 0.5 were considered reliable and such of those statements were retained. The 'R' values are given in Table 1.

Further to establish the significance of the test items't' value was calculated. The't' value greater than the table value at 0.0 level, were taken into consideration.

Based on the above mentioned statistical treatments out of 53 statements 30 statements were found to be valid. The final version of the tool entitled "Impact of e-learning on the Teacher' of Higher Education (IELTH) consists of 30

Item No.	't' value	Kolmogorov - Smirnov Test	Cronbach's Alpha	Correlations
1	6.30	2.381	0.898	0.888
2	5.81	2.393	0.918	0.876
3	7.89	2.994	0.926	0.897
4	8.13	3.198	9.861	0.881
5	8.99	3.365	0.894	0.928
6	5.21	1.769	0.932	0.905
7	8.10	3.588	0.881	0.840
8	6.04	2.051	0.926	0.860
9	9.90	3.536	0.831	0.832
10	7.50	3.350	0.731	0.714
11	7.96	3.266	0.902	0.894
12	9.06	3.965	0.867	0.852
13	8.17	3.008	0.905	0.897
14	9.75	3.418	0.824	0.791
15	7.93	3.310	0.859	0.856
16	10.35	4.219	0.793	0.731
17	8.60	2.994	0.931	0.911
18	7.89	3.266	0.895	0.887
19	6.90	2.518	0.920	0.916
20	9.95	3.470	0.803	0.815
21	9.76	3.606	0.710	0.801
22	10.34	3.606	0.861	0.857
23	10.87	3.88	0.857	0.773
24	10.65	3.674	0.837	0.814
25	7.71	3.538	0.788	0.846
26	8.95	3.334	0.943	0.980
27	8.02	3.402	0.934	0.922
28	8.32	2.790	0.919	0.914
29	8.57	3.062	0.935	0.934
30	8.13	3.130	0.937	0.920

Table 1. Impact of E- Learning on the Teachers' of Higher Education (IELTH)

on the Teacher' of Higher Education (IELTH) consists of 30 statements with the dimensions Personal effectiveness (10 statements), teaching skill (13 statements) and research and academic work (7 statements). The tool consists of five point likert scale with a maximum score of 150 and a minimum of 30.

Conclusion

This research tool (IELTH) focuses on gathering information about the mind set of teachers on how far e-learning improves their personal effectiveness in teaching, their teaching skills and helps in promoting their research and academic activities. E-learning is in the embryonic stage in the Indian higher educational scenario. This is the time to read the mind set of the teachers towards e-learning and accordingly the appropriate e-learning strategies may be evolved in the higher educational institutions. This research tool will be of immense use for the educational administrators, which will throw light upon the impact of e-learning on teachers of Higher Education.

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